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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,710	04/11/2001	Leonard H. Bieman	65,017-173	1656
7590	12/16/2004		EXAMINER	
DAVID M. LAPRAIRIE, ESQ. HOWARD & HOWARD 39400 Woodward Avenue, Suite 101 Bloomfield Hills, MI 48304-5151			HO, TUAN V	
			ART UNIT	PAPER NUMBER
			2615	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/832,710	BIEMAN ET AL.
Examiner	Art Unit	
Tuan V Ho	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-19 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

<ol style="list-style-type: none"> <li>1)<input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3)<input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.</li> </ol>	<ol style="list-style-type: none"> <li>4)<input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____.</li> <li>5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</li> <li>6)<input type="checkbox"/> Other: ____.</li> </ol>
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1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. Claim 9 is objected to because of the following informalities: "said matrix of light source" should be changed to "said light sources". Appropriate correction is required.
3. Claim 19 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 16. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).
4. Applicant is advised that should claims 16 and 19 be found allowable, claims 16 and 19 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to

the other as being a substantial duplicate of the allowed claim.  
See MPEP § 706.03(k).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2 and 9-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Netzer (US 5,930,383) in view of Greivenkamp, Jr. cited by Applicant. (US 4,794,550).

With regard to claims 1 and 2, Netzer discloses in Fig. 5, a depth sensing camera for generating a three-dimensional image of an object, which comprises the housing (the camera system shown in Fig. 5 must be inherently included a housing such as a box housing that is used to hold LED's 32-40, col. 7, lines 1-7; otherwise, the LED's are floating in the air), at least three light sources (LED's 32-40 are mounted on the housing so as to be in position for readily to illuminate object 13 as shown in Fig. 5), camera (CCD camera 30 is spaced from the LED's in order

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to receive the image light from object 13), and controller connected to the light sources for sequentially illuminating the light sources and connected to the camera (computer 39 is connected to CCD camera 30 and LED's 32-40 and controls CCD camera to capture different images under different light sources so as to generate a three-dimensional image, col. 7, line 12, col. 1, lines 50-67 and col. 2, lines 25-63 and col. 8, lines 18-35), except that an imaging device is mounted to said housing and spaced from said light sources for focusing the projected light to define an image projected upon the object.

Netzer does not explicitly disclose any imaging device that is used to focus the projected light from the light sources. However, Greivenkamp, Jr. teaches using light source 20 that includes lens 22 used to focus the projected light from the light source (col. 1, line 55 and Fig. 1). As a result, the projected light has more intensity and is more focused on the object because the projected light is condensed on a particular subject.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate lens 22 of Greivenkamp, Jr. before the LED's of Netzer in order to focus the projected lights on object 13 and

thereby to improve light intensity and accuracy of light positions.

In the combination, since LED's are mounted on a housing, lens 22 must be mounted on the same housing so as to capture the projected lights from LED's.

With regard to claim 9, furthermore, Netzer discloses in Fig. 5, the camera 30 that captures each image produced by the light sources 32-40.

With regard to claim 10, furthermore, Netzer discloses in Fig. 5, the processor (computer and calibration circuit 39 inherently includes a processor, col. 7, lines 12-13).

With regard to claim 11, furthermore, Netzer discloses in Fig. 5, the sensor including a two-dimensional imaging array (image array, col. 4, lines 36-37).

With regard to claim 12, Netzer discloses one-dimensional imaging array for producing a bit map along a single line (linear array is disclosed in col. 10, claim 13).

With regard to claim 13, furthermore, Netzer discloses in Fig. 5, the sensor is a single detector (array sensors of Netzer include an array of pixels; where each pixel inherently produces a bit map at a single point).

With regard to claim 14, furthermore, Netzer discloses in Fig. 4, the light sources arranged in at least three rows to

define a matrix of light sources (light sources S1-S3 are arranged in a straight line; as the result of the arrangement, the light sources can be arranged in a matrix including three rows and one column, see col. 6, lines 5-18).

With regard to claims 15 and 18, furthermore, Netzer discloses in Fig. 5, the discreet point light sources defined by light emitting diodes (LED's 32-40, col. 7, line 6).

With regard to claims 16 and 19, furthermore, Netzer in view of Greivenkamp, Jr. does not disclose any at least three slab diode lasers. Official Notice is taken for slab diode lasers that are used as light sources; where the slab diode lasers provide more light intensity than regular LED's.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the LED's of Netzer in view of Greivenkamp, Jr. with at least three slab diode lasers because the replacement of the LED's with slab diode lasers would allow the system of Netzer in view of Greivenkamp, Jr. to illuminate object 13 at a further distance thereby to improve focusing operations and versatility of the system.

With regard to claim 17, furthermore, Netzer in view of Greivenkamp, Jr. does not explicitly disclose at least three horizontally oriented light stripes which emit a line of light.

Official Notice is taken for an array of LED's, which includes at least three horizontal oriented light stripes emitting lines of light.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the array of LED's of Netzer in view Greivenkamp, Jr. with an array of LED's including at least three horizontal oriented light stripes in order to obtain an array of LED's including at least three horizontal oriented light stripes emitting lines of light in the Netzer and Greivenkamp, Jr. system because the substitution of the LED's would allow the light sources of Netzer in view of Greivenkamp, Jr. generating more powerful light intensity and thereby to facilitate focusing operations and providing more efficiency to the system.

6. Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Netzer (US 5,930,383) in view of Greivenkamp, Jr. (US 4,794,550) further in view of Forster, Jr. (US 3,744,882).

With regard to claims 3 and 6, Netzer in view of Greivenkamp, JR. discloses the same subject matter as discussed with respect to claims 1 and 2, except for the fresnel lens and diffuser.

Forster, Jr. discloses in Fig. 3 using fresnel lens 21 having concentric grooves and diffuser 24 for blurring an image in front of a light source of a real image viewing system; where the use of fresnel lens and diffuser minimized image distortion and reduce manufacturing cost (col. 4, lines 12-16, lines 31-33 and lines 41-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the lens 22 of Netzer in view of Greivenkamp, Jr. with fresnel lens 21 and diffuser 24 of Forster, Jr. in order to focus the projected light on object 13 because the replacement of lens 22 with fresnel lens 21 and diffuser 24 would reduce image distortion and manufacturing cost.

With regard to claim 4, Netzer in view of Greivenkamp, Jr. and Forster, Jr. does not disclose fresnel lens 21 having grooves that face inward toward the light source. Official Notice is taken for a fresnel lens having concentric grooves facing toward a light source so as to spread the light toward a particular position.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to install the fresnel lens 21 of the system of Netzer in view of Greivenkamp and Forster in order to spread light sources toward

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object 13 so as to cover all of the surface of the object and thereby to provide complete image captured by the camera.

With regard to claim 5, Forster further discloses fresnel lens 21 having concentric groove that face outward away from the light source since in the position, the projected light is focused on a viewer.

With regard to claim 7, Netzer in view of Greivenkamp, Jr. and Forster, Jr. does not disclose any diffuser having an array of aligned cylindrical lenses. Official Notice is taken for a diffuser having an array of aligned cylindrical lenses.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace diffuser 24 of Netzer in view of Greivenkamp and Forster so as to obtain a diffuser having and array of aligned cylindrical lenses because the diffuser having and array of aligned cylindrical would provide better quality images than the plastic panel diffuser of Forster and thereby to improve image capture operation of camera 30.

With regard to claim 8, the same argument was discussed with respect to claim 4.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ngoi et al discloses an inspection system that includes an array of LED's.

Xu discloses an iamge processing apparatus that includes an array of light emitting units.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUAN HO whose telephone number is (703) 305-4943. The examiner can normally be reached on Mon-Fri from 7AM to 4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen, can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



TUAN HO

Primary Examiner

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